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SERIAL NUMBER	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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EXAMINER

ART UNIT	PAPER NUMBER
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DATE MAILED:

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

☒ This application has been examined ☐ Responsive to communication filed on _____ ☐ This action is made final.

A shortened statutory period for response to this action is set to expire three month(s), _____ days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- | | |
|---|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited by Examiner, PTO-892. | 2. <input checked="" type="checkbox"/> Notice of Draftsman's Patent Drawing Review, PTO-948. |
| 3. <input checked="" type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449. | 4. <input type="checkbox"/> Notice of Informal Patent Application, PTO-152. |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474. | 6. <input type="checkbox"/> _____ |

Part II SUMMARY OF ACTION

1. ☒ Claims 1-12 are pending in the application.

Of the above, claims _____ are withdrawn from consideration.

2. ☐ Claims _____ have been cancelled.

3. ☐ Claims _____ are allowed.

4. ☒ Claims 1-12 are rejected.

5. ☐ Claims _____ are objected to.

6. ☐ Claims _____ are subject to restriction or election requirement.

7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.

8. ☐ Formal drawings are required in response to this Office action.

9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice of Draftsman's Patent Drawing Review, PTO-948).

10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____, has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).

11. ☐ The proposed drawing correction, filed _____, has been ☐ approved; ☐ disapproved (see explanation).

12. ☐ Acknowledgement is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☐ been received ☐ not been received ☐ been filed in parent application, serial no. _____; filed on _____.

13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.

14. ☐ Other

EXAMINER'S ACTION

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1. Applicant is requested to supply a corrected reference to the cited patent on page 4, line 6, of the specification, as the reference cited does not appear to be applicable to applicant's disclosure.

2. Claims 1-12 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are replete with numerous ambiguities that make them nearly indecipherable. They need to be extensively rewritten so that they can be fully understood as to exactly what is intended to be claimed in the various claims. The following is a listing of the most glaring ambiguities in the claims, and applicant is requested to fully review the claims and correct the noted, as well as any other unclear language that he should become aware of in reviewing the claims. Additionally, it is noted that because of the poor claim language, it is not clear exactly what each claim is actually reciting, and that while different claims appear directed to distinct inventions, a proper determination can not be made at this time. Therefore, applicant is requested to review the claims and ensure that each of the pending claims (either rewritten original claims or new claims) are directed to only a single invention.

In claim 1, line 2, the recitation is unclear as to with what the "relative location" of the probe is determined. In line 6,

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"the video image" and line 7, "the digital image" both lack proper antecedent basis. In lines 7-8, the recitation of the positioning of the image is unclear as to exactly how this is done and what reference is used to properly position the image, as well as how the probe position and view are used in the positioning and if they are actually part of the repositioned image (similar recitation appears in the last two lines of claim 6).

In line 2 of claim 6 (as well as in claims 7 and 8) "the scrub mark" lacks antecedent basis. In line 4 of claim 6, the phrase "in digital form" is unclear if it modifies the "image" or the "probe tip". In lines 6-7, the recitation is unclear as to exactly what images are analyzed, and, further, "the video image" lacks antecedent basis.

In claim 8, lines 8-9 are unclear and not understood. What exactly is to be measured in this recitation, and how it is measured, is not clear from this recitation. In line 10, "the contacted point" lacks clear antecedent basis. In lines 12-13, the recitation is not clear as to what is intended. What is the relation of the phrase "representing the length of the probe tip" to the rest of the claim recitation? As currently written, this phrase has no apparent connection to the rest of the claim language.

In claim 9, line 1, "the probe tip" lacks antecedent basis. In line 3, recitation is made to "each probe tip", though only a single tip has previously been referred to in the claim. Also in

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line 3, "the probe card" lacks antecedent basis. In line 7, the phrase "of the same type" is indefinite. The same as what?

In claim 10, line 2, "the test apparatus" lacks antecedent basis, as does "the video microscope" in line 3 and "the image" in line 10. Additionally, lines 4-5 are unclear as to what is intended. Who or what is "moving in a known direction"?

In claim 11, line 2, "the lowest probe" lacks antecedent basis as there has been no previous recitation of any probes, and definitely no recitation of a "lowest probe". Further, in what way is the probe "lowest". Does this refer to a physical position, a rank or something else? Additionally, it is not clear in what way "sanding" is being performed by the claim language or how this has any relation to determining the locations of probes.

In claim 12, line 1 recites "determining the relative locations of bonding pads" but does not say with what the locations are "relative" to in the claim language. In line 3, the recitation is unclear as to in what way the recited "photomask" is part of the recited "means for determining the relative locations of bonding pads". While the photomask may be part of the chip that has the pads, it does not form part of the "means for determining" as the claim now recites. In line 4, "each bonding pad area" lacks clear antecedent basis as there is no previous recitation of a "bonding pad area", only a "bonding pad". In line 8, the recitation of "between clear and dark areas" is unclear and ambiguous as to exactly what is intended by the recitation. In line 10 "said

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bonding pad image" lacks proper antecedent basis as the claim only recites getting an image of "each bonding pad area" and not the "bonding pad" itself. In line 11, "the video image" lacks antecedent basis. In line 12, "the center" lacks antecedent basis, and, further, there is no previous recitation of actually determining where the center actually is located. In line 12, "the digital image" lacks antecedent basis. Also, line 13, the recitation is unclear as to exactly what is intended by this recitation.

3. The following is a quotation of the first paragraph of 35 U.S.C. § 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification is objected to under 35 U.S.C. § 112, first paragraph, as failing to provide an enabling disclosure.

The specification does not discuss the sanding of probe tips as is recited in claim 11. While the specification has various disclosed process for determining the location of probes, determining the scrub marks, and other processing of the image with a probe therein, there does not appear to be any disclosure directed to the sanding of the probe tips.

4. Claim 11 is rejected under 35 U.S.C. § 112, first paragraph, for the reasons set forth in the objection to the specification.

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The drawings are objected to under 37 C.F.R. § 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the sanding of the probe tips must be shown or the feature cancelled from the claim. No new matter should be entered.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-2, 4, 6, and 9, as best understood, are rejected under 35 U.S.C. § 102(b) as being anticipated by Sato et al.

Sato discloses a system (as applied to claims 1, 6, and 9) for probe inspection of wafers, comprising, a viewing system, a surface contacted by a probe, a computer with software to analyze an image of the probe tip, and positioning means to position the probe tip with respect to the image of the wafer. See Abstract, Figs. 1-16, 19-23; column 1, line 6 to column 3, line 11; column 4, line 20 to column 10, line 45; and column 18, line 66 to column 20, line 26. As to claim 2, the viewing system is a CCD camera. As to claim 4, the reference clearly shows an X, Y, Z positioning means as shown in the Figs.

7. The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102

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of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103, the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 C.F.R. § 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of potential 35 U.S.C. § 102(f) or (g) prior art under 35 U.S.C. § 103.

Claims 3, 5, 7, 8, 10-12, as best understood, are rejected under 35 U.S.C. § 103 as being unpatentable over Sato et al in view of Chang et al.

The statements advanced in paragraph 6, above, as to the applicability and disclosure of the Sato et al. are incorporated herein.

As to the limitations in the claims (such as 5, 7, 8, 10, and 12) directed to the analysis of the image for defects (like scrub marks), it is well known in the processing and inspection of wafers and similar objects, to determine the presence and locations of such defects so as to eliminate defective material, as well as in when using probes, to ensure that the probes are being positioned

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correctly and that they are not causing damage to the wafer (or other object being inspected). Chang is cited as showing the conventional process of inspecting a surface for defects by the use of a CCD camera, a computer and associated software. See Abstract, Figs. 1-3, 7; column 1, line 31 to column 2, line 20. To one of ordinary skill in the art, it would have been obvious, at the time of the invention, to use the processing of Chang in the system of Sato to inspect the object for defects because of the conventionality of doing this type of inspecting and because of the conventionality and necessity of determining if defects (scrub marks) are being caused by the system and to eliminate the cause of such defects. Further, both systems are for the processing and inspection of similar types of objects.

As to claim 3, the use of this type of material is conventional and to one of ordinary skill in the art it would have been obvious to make the window out of this (Official Notice).

As to claim 11, as best understood, the performance of a sanding operation would have been obvious to one of ordinary skill in the art so as to ensure proper contact between the probe tip and the object and to maintain the proper shape of the probe tip for operation (Official Notice).

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Karasawa and Yamanaka disclose various systems for the use of probe systems. Holdgrafer discloses a system for the determination

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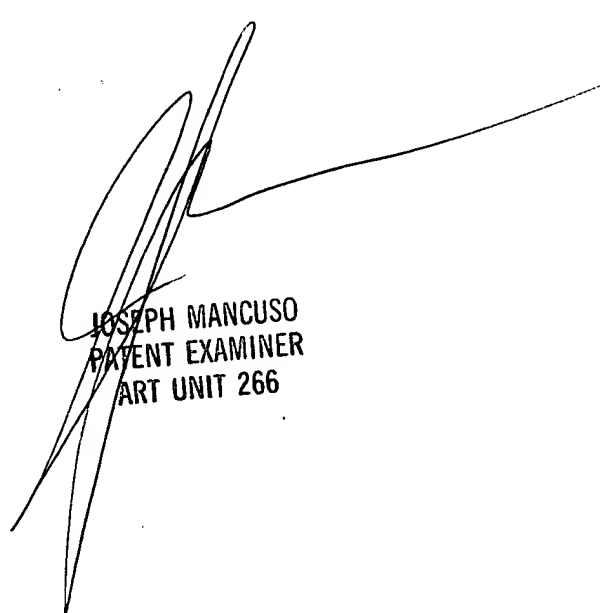
of the center of bonding positions. Kubota et al. discloses a system for the determination of three dimensional coordinates of an object. Ishiguro et al. discloses a system for the use of a robot to position and manipulate objects.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Mancuso whose telephone number is (703) 305-4927.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-4900.

The Group 2600 Fax number is (703)-305-9508.

jm
September 19, 1994



JOSEPH MANCUSO
PATENT EXAMINER
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